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Plasma polymerization of precursors containing stable radicalsThomas Michl¹, Jakob Barz², Christian Oehr², Hans Griesser¹, Bryan Coad³¹University of South Australia, Mawson Lakes, Australia ²IGB Fraunhofer, Stuttgart, Germany ³University of Adelaide, Adelaide, Australia

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In this paper, we present the results of the plasma polymerization of precursors containing stable radicals. The retention of the radical sites in the plasma polymer was probed by electron-paramagnetic resonance (EPR): besides the assignment of different radicals, a time-dependent study was carried out as well. The overall chemical composition was examined in detail by x-ray photoelectron spectroscopy and ToF-SIMS. It is further shown how the plasma process parameters affect the radical composition, the radical density and the stability of the polymer films. Potential applications range from controlled polymer grafting to the control of biological signaling on coated surfaces. For example, these thin film coatings were capable of interfering with the quorum sensing of the opportunistic pathogen *Staphylococcus epidermidis* for a time period of 21 hours while exhibiting low toxicity towards human Kg1a cells.

Keywords

Stable radicals

EPR

antimicrobial

biomaterial